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QC ABSTRACT

NAME OF WORK: Package No.03 (Package Consists of 21 Works)

L NO	Item Of Work	Name of Test	Frequency of Test/Quantity	Executed Quantity	Number of Tests Required	Number of Tests Conducted
		Materials				
1	WMM	Sieve Analysis	One Test		1	1
		Impact Value	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
2	BM	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral Aggregate	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
3	BC	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
4	BITUMEN	Ductility	One Test		1	1
		Softening Point	One Test		1	1
		Penetration	One Test		1	1
		Flash Point	One Test		1	1
		Fire Point	One Test		1	1
5	TACK COAT	Rate of spread	One Test		1	1

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TEST RESULTS OF GRADATION FOR WMM

Lab ID : **CP-RW-2019-08-12-41** **Date: 19-06-19**

Project Name : Package No.03 (Package Consists of 21 Works)

Agency : Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 17-06-19

Type of Mix : WMM (Wet Mix Macadam)

Date of test : 17-06-19

Oven Dry Weight : 11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	306	306	2.8	97.2	95-100
22.4	2245	2551	23.2	76.8	60-80
11.2	2186	4737	43.1	56.9	40-60
4.75	2248	6985	63.5	36.5	25-40
2.36	1610	8595	78.1	21.9	15-30
0.6	612	9207	83.7	16.3	8-22
0.075	1323	10530	95.7	4.3	0-5

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Date: 19-06-19

Lab ID	:	**CP-RW-2019-08-12-41**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	17-06-19
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	17-06-19

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.8	74.2
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.5	0.2
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.7	

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-08-12-41**	**Date: 19-06-19**
Project Name	:	Package No.03 (Package Consists of 21 Works)	
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.	
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	:	17-06-19	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	17-06-19	

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.6%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.1%	

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Certificate No.: TC-5548

TEST RESULTS OF GRADATION FOR BM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	CP-RW-2019-08-12-41 **Date: 03-07-19**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	01-07-19
Type of Mix	:	BM-Plant (Bituminous Macadam)
Date of test		01-07-19
Weight of Sample(gm)	:	5000

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0	100	100
19	165	165	3.3	96.7	90-100
13.2	512	677	13.5	86.5	56-88
4.75	2759	3436	68.7	31.3	16-36
2.36	911	4347	86.9	13.1	4-19
0.3	358	4705	94.1	5.9	2-10
0.075	232	4937	98.7	1.3	0-8
PAN	63	5000	100.0	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS MACADAM

Lab ID	:	**CP-RW-2019-08-12-41** **Date: 04-07-19**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	01-07-19
Type of Mix	:	BM (Bituminous Macadam)
Date of test	:	01-07-19

Table 500-6 : Physical Requirements fo Coarse Aggregate for Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	13.8	Combined Flakiness & Elongation Index for BM is Maximum 35%	IS:2386 Part I
	Elongation Index	7.2		
Strength	Aggregate Impact Value	25.2	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.51	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.17	Maximum 2%	IS:2386 Part III

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2019-08-12-41** **Date: 04-07-19**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	01-07-19
Type of Mix	:	BM(Bitumnous Macadam)
Date of test	:	01-07-19

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : CP-RW-2019-08-12-41 Date: 04-07-19

Project Name : Package No.03 (Package Consists of 21 Works)

Agency : Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 01-07-19

Type of Mix : BM (Bituminous Mecadam)

Date of test : 01-07-19

The results of the tests conducted on the Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.29	11.82	9KN(Min)
2	Marshal flow at 60°C, mm	3.54	3.87	2-4
3	Percent air Voids	4.56	4.17	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.54	14.76	13-15
5	Percent Voids filled with Bitumen(VFB %)	68.98	70.28	65-75
6	Density, g/cc	2.42	2.40	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BM (IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2019-08-12-41**
Project Name	:	Package No.03 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	15-07-19
Type of Mix	:	BM (Bituminous Macadam) ,RK Layout , 5th main Road
Date of test	:	15-07-19

Date: 16-07-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	476	475
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.8	5.0
4	Average percentage	%	4.9	

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Certificate No.: TC-5548

Lab ID : CP-RW-2019-08-12-41

Date: 16-07-19

AFTER EXTRACTION(Trail-1)

Weight of Sample : 476 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0.0	100.0	100
19	38	38	8.0	92.0	90-100
13.2	147	185	38.9	61.1	56-88
4.75	191	376	79.0	21.0	16-36
2.36	28	404	84.9	15.1	4-19
0.3	32	436	91.6	8.4	2-10
0.075	31	467	98.1	1.9	0-8

AFTER EXTRACTION(Trail-2)

Weight of Sample : 475 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-7(grading -2)
26.5	0	0	0.0	100.0	100
19	38	38	8.0	92.0	90-100
13.2	147	185	38.9	61.1	56-88
4.75	191	376	79.2	20.8	16-36
2.36	28	404	85.1	14.9	4-19
0.3	32	436	91.8	8.2	2-10
0.075	31	467	98.3	1.7	0-8

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Date: 10-07-19

Lab ID	:	CP-RW-2019-08-12-41
Project Name	:	Package No.03 (Package Consists of 21 Works)
Agency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.
Customer Reference	:	BBMP/EE/BTP/WO/148/2018-19
Date of Receipt	:	08-07-19
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of test	:	08-07-19
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	91	91	1.8	98.2	90-100
9.5	700	791	15.8	84.2	70-88
4.75	887	1678	33.6	66.4	53-71
2.36	574	2252	45.0	55.0	42-58
1.18	482	2734	54.7	45.3	34-48
0.6	500	3234	64.7	35.3	26-38
0.3	512	3746	74.9	25.1	18-28
0.15	446	4192	83.8	16.2	12-20
0.075	341	4533	90.7	9.3	4-10
PAN	467	5000	100	0.0	0

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	: **CP-RW-2019-08-12-41**	**Date: 11-07-19**
Project Name	: Package No.03 (Package Consists of 21 Works)	
Agency	: Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.	
Customer Reference	: BBMP/EE/BTP/WO/148/2018-19	
Date of Receipt	: 08-07-19	
Type of Mix	: BC(Bitumenous Concrete)	
Date of test	: 08-07-19	

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID : **CP-RW-2019-08-12-41** **Date: 11-07-19**

Project Name : Package No.03 (Package Consists of 21 Works)

Agency : Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 08-07-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 08-07-19

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	12.6	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	11.4		
Strength	Aggregate Impact Value	22.2	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.66	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.22	Maximum 2%	IS:2386 Part III

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TESTS RESULTS ON STABILITY OF MIX

Lab ID : **CP-RW-2019-08-12-41** **Date: 11-07-19**

Project Name : Package No.03 (Package Consists of 21 Works)

Agency : Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 08-07-19

Type of Mix : BC (Bituminous Concrete)

Date of test : 08-07-19

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.12	11.15	10KN(min)
2	Marshal flow at 60°C, mm	3.5	3.52	2-4
3	Percent air Voids	4.84	4.81	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.26	14.28	13-15
5	Percent Voids filled with Bitumen(VFB %)	71.85	71.61	65-75
6	Density, g/cc	2.27	2.24	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : **CP-RW-2019-08-12-41** **Date: 18-07-19**

Project Name : Package No.03 (Package Consists of 21 Works)

Agency : Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 16-07-19

Type of Mix : BC (Bituminous Concrete) RK Layout, 5th main Road

Date of test : 16-07-19

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	469	470
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	6.2	6.0
4	Average percentage	%	6.1	

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Lab ID : **CP-RW-2019-08-12-41** **Date: 18-07-19**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 469

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	5	5	1.1	98.9	90-100
9.5	59	64	13.6	86.4	70-88
4.75	104	168	35.8	64.2	53-71
2.36	74	242	51.6	48.4	42-58
1.18	15	257	54.8	45.2	34-48
0.6	59	316	67.4	32.6	26-38
0.3	39	355	75.7	24.3	18-28
0.15	30	385	82.1	17.9	12-20
0.075	55	440	93.8	6.2	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 470

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	5	5	1.1	98.9	90-100
9.5	59	64	13.6	86.4	70-88
4.75	100	164	34.9	65.1	53-71
2.36	79	243	51.7	48.3	42-58
1.18	16	259	55.1	44.9	34-48
0.6	58	317	67.4	32.6	26-38
0.3	35	352	74.9	25.1	18-28
0.15	32	384	81.7	18.3	12-20
0.075	55	439	93.4	6.6	4-10

Note:-

The results pertain to the samples received and tested.
All information Furnished by Customer/ Representative
Any correction in the report will make this report invalid.
This report without prior written approval should not be reproduced or published in full or part.
Samples will be disposed after 90 days from the date of issue of test certificate

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

CIVIL Pro Sig. Date.

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

End of Report

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL |
GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

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TEST REPORT ON BITUMEN

ab ID	:	**CP-RW-2019-08-12-42**	**Date: 27-06-19**
roject Name	:	Package No.03 (Package Consists of 21 Works)	
gency	:	Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.	
ustomer's Reference	:	BBMP/EE/BTP/WO/148/2018-19	
ate of Receipt	:	26-06-19	
ample Type	:	Bitumen	
eference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)	
ate of test	:	26-06-19	

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**66**	60 to 70
2	Softening Point, °C	**52**	Min. 40°C
3	Ductility, cm	**96**	Min. 75cm
4	Flash point, °C	**246**	Min. 220°C
	Fire point, °C	**278**	

Note:-

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Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

CIVIL Pro Sig Date BANGALORE

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

****End of Report****

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID : **CP-RW-2019-08-12-42** **Date: 17-07-19**

Project Name : Package No.03 (Package Consists of 21 Works)

Agency : Sri.C.G.Chandrappa, #1C-301, 3RD Main Block, HRBR Layout, Kalyan Nagar, Bangalore-560043.

Customer Reference : BBMP/EE/BTP/WO/148/2018-19

Date of Receipt : 16-07-19

Type of Mix : Tack coat

Date of test : 16-07-19

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.76
4	Final weight of plate after application of tack Coat (c)	Kg	0.80	0.78
5	Weight of tack Coat (d=c-b)	Kg	0.023	0.023
6	Rate of spread of tack coat	Kg/sq.m	0.256	0.256
7	Average	Kg/sq.m	0.256	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

Assistant Executive Engineer
Vidyaranyapura Sub Division
BBMP, Bangalore - 97

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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